Public Health INFORMATICS Institute

NACCHO NATIONAL ASSOCIATION OF COUNTY & CITY HEALTH OFFICIALS

Research Brief

Putting Training on Track

Surveys of local public health agencies show that time and budget compete with a growing need for informatics learning

Surveys of local public health agencies (LPHAs) show that a gap exists between the need and demand for informatics[1] training. Additionally, there is a lack of resources to meet perceived informatics training needs.

Key findings from the surveys show:

Competing priorities: Despite survey participants reporting high need, informatics training receives a low priority in many local public health agencies.

Specific versus broad-ranging needs: Informatics training needs of local public health agencies appear broad and complex, while the current training programs of these LPHAs are heavily weighted toward the use of specific software packages. Much of this training focuses on basic applications, such as Microsoft Office® products, administrative systems, and program-specific applications.

Tight resources: Respondents cite inadequate staff time and training budgets as significant barriers to providing effective informatics training.

The survey results reveal a dilemma: Local public health agencies need to use information technology tools to perform their public health mission effectively and efficiently, yet they often lack technical assistance and training to develop the skills and knowledge needed to use those tools to their best advantage.

In 2003, the National Association of County and City Health Officials (NACCHO) and the Public Health Informatics Institute, with sponsorship from The Robert Wood Johnson Foundation, conducted a series of in-depth written surveys of a small group (n=23) of LPHAs, focusing on their informatics capabilities and practices. Two of the five surveys covered the topic of informatics training. Survey participants, representing LPHAs serving medium to large populations, were selected based on their interest and leadership in information technology.

At the end of this brief, the Conclusions and Recommendations section is followed by Recommended Actions, which spell out suggested direction going forward. The Next Steps section recaps some successes and suggests further informatics training opportunities.

Conclusions and Recommendations

The survey results and research indicate that:

- *Informatics competencies have not been adequately assessed among LPHA staff.*
- *Informatics training is not given the priority it needs.*
- *Training is often unavailable in a format that meets an agency's training needs, timeframes, and cost constraints.*

To address these issues, the survey team recommends that all participants in the public health system give high priority to:

- *Assessing the informatics competencies of the LPHA workforce.*
- *Elevating the importance of informatics training for public health workers.*
- *Providing informatics training that meets the overall public health workforce's needs and requirements.*

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[1] Public Health Informatics is defined as: the systematic application of information and computer science and technology to public health practice, research, and learning (Yasnoff et al., 2000). Its scope includes the conceptualization, design, development, deployment, refinement, maintenance, and evaluation of communication, surveillance, and information systems relevant to public health. (IOM, 2003).

Informatics Competencies Defined

The three classes of informatics competencies defined in *Informatics Competencies for Public Health Professionals* (O'Carroll et al., 2002) provide a useful framework for analyzing the informatics training practices and needs of LPHAs. The informatics competencies were developed by the Public Health Informatics Competencies Working Group and released in August 2002. The public health informatics competencies reflect a public health worker's observable or measurable performance, skill, or knowledge related to the systematic application of information and computer science and technology to public health. These competencies are intended to be applicable to practicing public health professionals and were designed to complement the more general set of *Core Competencies for Public Health Professionals*, developed by the Council on Linkages Between Academia and Public Health Practice (O'Carroll et al., 2002).

Three classes of informatics competencies are defined as:

Class 1: The use of information *per se* for public health practice; that is, the scientifically sound and ethical use, assessment, analysis, interpretation, and dissemination of data and information.

Class 2: Use of information technology to increase one's individual effectiveness as a public health professional.

Class 3: The development, deployment, and maintenance of information systems to improve the effectiveness of the public health enterprise.

Survey Goals

The surveys were launched with three main goals:

1. To gather information about current informatics training practices and training needs of LPHAs.
2. To inform practice-based actions needed to enhance availability and delivery of informatics training.
3. To identify areas for additional study.

The survey questions were designed to:

- Characterize current informatics training practices at the surveyed LPHAs.
- Explore perceptions about the relative importance and priority of topics for informatics training.
- Gain understanding of the specific requirements for informatics training for the public health workforce.

In recent years, public health has addressed a variety of challenges, including emergency preparedness, severe acute respiratory syndrome (SARS), anthrax, West Nile virus, environmental health threats, and increasing rates of chronic disease and obesity among adults and children. While each has unique aspects, collectively these challenges have highlighted the demands on our public health system and the need to strengthen components of the public health infrastructure. One of these components is the use and understanding of public health informatics—information and computer science and technology as they relate to public health.

Public health informatics is not just a fundamental component of the interdependent federal, state, and local public health systems; it also has a significant impact on the comprehensive system's ability to perform its core functions of assessment, policy development, and assurance (The Future of Public Health, IOM, 1988). Each of these functions is principally dependent on the use and dissemination of information, which cannot be accomplished without an understanding of the tools of information technology.

Sophisticated information technology tools are increasingly available, but are useless unless public health workers have the competencies required to use them effectively to accomplish these core functions. For LPHAs to become more efficient and effective as learning centers that organize and coordinate their responsibilities within the overall health system, public health leaders need to focus on informatics training for the overall LPHA workforce.

Conclusions and high-level recommendations

The survey results and research indicate that:

- Informatics competencies have not been adequately assessed among LPHA staff.
- Informatics training is not given the priority it needs.
- Training is often unavailable in a format that meets an agency's training needs, timeframes, and cost constraints.

To address these issues, the survey team recommends that all participants in the public health system give high priority to:

- Assessing the informatics competencies of the LPHA workforce.
- Elevating the importance of informatics training for public health workers.
- Providing informatics training that meets the overall public health workforce's needs and requirements.

More detailed recommendations and rationale follow the Findings section.

Findings

The surveys highlighted several key findings:

Despite self-reports of high need, informatics training receives a low priority from many LPHA respondents.

The information collected suggests that few LPHAs have a formalized informatics-training program. Most LPHAs report that informatics training is offered to staff on an ad hoc basis. Very few report having a structured informatics-training program, and four report that their agencies do not offer any informatics training to staff.

LPHAs were asked how frequently they offer informatics training (including classes sponsored by the LPHA and those offered by other organizations that the LPHA arranges for staff to attend) to four groups of staff: senior management, professional program staff, information technology (IT) staff, and clerical/administrative staff. Responses for each group ranged from "never" to "more than three times per year." The median responses were "less than once per year" for senior management and clerical/administrative staff and approximately "once per year" for professional program staff and IT staff.

At many LPHAs, informatics training has a relatively low priority compared to other areas of training, both in terms of staff perceptions and budget. LPHAs were asked to consider the relative priority of informatics-related training, compared to other staff training offered by their agencies. More than half (11) reported that informatics-related training was of relatively low priority, five reported average priority, and two reported relatively high priority. LPHAs were asked to estimate the percentage of their entire staff training budget that is dedicated to informatics-related training. A large majority reported that 10 percent or less of the staff training budget was used for informatics training, and nearly half reported five percent or less. Four respondents reported spending 20 percent or more of their training budget on informatics training.

In contrast, most respondents rated the need for additional informatics training relatively high on the scale, especially for senior management and program staff. Participants were asked to rate the need for additional training to improve public health informatics skills for four different groups at their LPHA: senior management, program staff, IT staff, and the Board of Health. Respondents used a five-point scale in which 1 = no need for additional training and 5 = great need for additional training. The need for additional informatics training was rated as relatively high for all groups (ratings ranged from 3.1 to 4.1). Program staff and senior management were perceived as most in need of training, with mean ratings of 4.1 and 3.8, respectively.

Informatics training needs of LPHAs appear broad and complex, while the current training programs of these LPHAs are heavily weighted toward the use of specific software packages.

Participants were asked to list up to five informatics-related training classes taken most frequently by staff. Training to use the Microsoft Office® suite of products was reported most frequently, closely followed by training to use software specific to a local public health program. (See Figure 1.) Five LPHAs mentioned training on software for data analysis, such as statistical or GIS programs. Using the three-category framework of the

About the survey participants

In August and September 2003, NACCHO explored issues of informatics training for the LPHA workforce in two online surveys of LPHA professionals representing a variety of disciplines and areas of expertise. Thirteen of these participants were selected via a competitive process, and their LPHAs each received an honorarium of $1,000 for completing a series of five surveys. Ten of the survey participants were members of NACCHO's Information Technology Committee.

Given the number and diversity of LPHAs (nearly 3,000 agencies in the U.S.) and the small size of the sample surveyed (n=23), the findings and conclusions do not apply to all LPHAs. The participating LPHAs do not serve any populations less than 100,000, and they were a self-selected group, based on membership in NACCHO's Information Technology Committee or interest in participating in the survey sites program.

About NACCHO

The National Association of County and City Health Officials (NACCHO) is the national nonprofit organization representing local public health agencies (including city, county, metro, district, and tribal agencies). NACCHO provides education, information, research, and technical assistance to local health departments and facilitates partnerships among local, state, and federal agencies to promote and strengthen public health.

For more information, visit www.naccho.org, call (202) 783.5550, or direct e-mail inquiries to info@naccho.org.

"There are no standard informatics/IT trainings, except for fundamental PC…"

– survey respondent

"The managers, program staff and Board of Health need training that crosses over between what IT would cover and what Epidemiology would cover. It is critical that they know how to think in a very basic way about data in general and then about the information they are reviewing. Each should be able to ask and understand the answers to questions like: Where are the data from? How was it collected? Exactly how was the question asked? From whom was it collected? Is this a statistical sampling, a service sample? What types of conclusions can be drawn from these data?"

– survey respondent

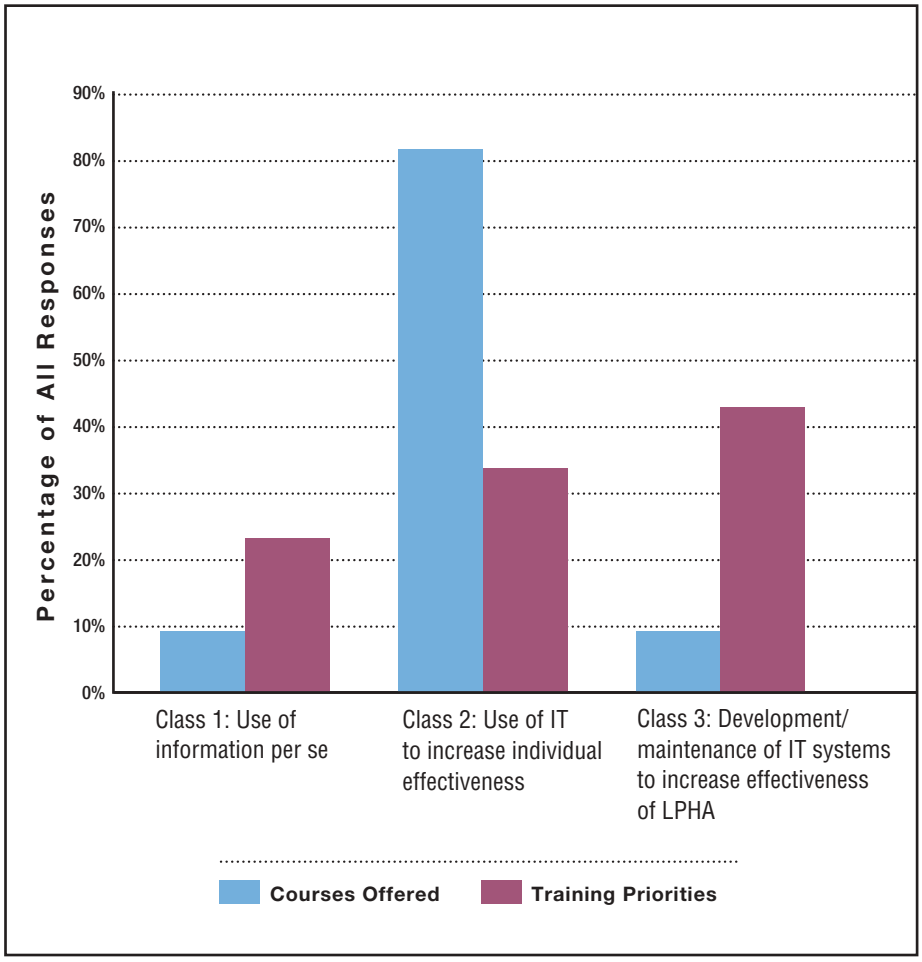

Figure 1: *Comparison of frequently offered informatics classes versus informatics-training priorities for LPHAs*

Informatics Competencies (see sidebar page 2), most of the informatics training currently provided by LPHAs focuses on use of IT to increase one's individual effectiveness as a public health professional (Class 2). Furthermore, these results suggest that much of this training focuses on basic applications, such as Microsoft Office® products, administrative systems, and program-specific applications.

The participants' assessment of priority informatics training needs provides a sharp contrast to the informatics-related courses their LPHAs are offering. Participants were asked to list up to three priority areas of informatics training for four groups of individuals at their LPHAs: senior management, program staff, IT staff, and the Board of Health. The responses to this question indicated a wide range of informatics training priorities. Across all groups, courses relating to Informatics Competency Class 3 (development, deployment, and maintenance of information systems to improve the effectiveness of the public health enterprise) were mentioned most frequently. Priorities for informatics training varied considerably by staff group. Courses related to Class 3 were mentioned most frequently for senior management, IT staff, and Board of Health. Courses related to Informatics Competency Class 2 (use of information technology

to increase one's individual effectiveness as a public health professional) were mentioned most frequently for LPHA program staff. The Class 2 courses mentioned as priorities covered a wide range of skills, including training on how to use IT effectively for health promotion, use of data analysis tools, and utilizing online information sources.

Respondents cite inadequate staff time and training budgets as significant barriers to providing effective informatics training.

LPHAs were asked to choose two barriers that presented the greatest challenges to optimizing their informatics-training program.

The top responses were:

- Lack of staff time to participate in informatics training (13 responses).
- Lack of funds to pay for informatics training (11 responses).

Very few survey participants indicated that staff members were not interested in informatics training. Most respondents reported that their LPHAs would be willing to pay $100 to $250 per person for a one-day, in-person training on a high-priority topic for senior management and program staff.

A series of questions gauged the interest of senior management and program staff in selected informatics training topics and the time they would commit in pursuing those interests. Three training areas were identified for each staff group, based on responses to an open-ended question on training priorities on the previous survey.

Topic areas for senior management were:

- Leadership and vision for using information technology.
- Data collection and analysis for decision support, communication, and evaluation.
- Stewardship for information technology resources (e.g., IT systems development and management).

Topic areas for program staff were:

- Effective use of information technology resources.
- Data collection and analysis for program management and evaluation.
- Learning basic computer skills (e.g, Microsoft Office® programs).

Participants were asked how much time they thought senior management in their LPHA would be willing to devote annually to training in these topic areas. Respondents reported that senior management would be willing to devote the most time to data collection and analysis—a median time of one day. Respondents reported that senior management would devote four hours each to both of the other topics. Participants were asked how much time management would approve for program staff to participate in training in three specific topic areas. Respondents reported that the most support would be for training in data collection and analysis (median time 12 hours), followed by effective use of IT resources (median time 8 hours), and finally learning computer basics (median time 4 hours).

Sources of informatics training for public health workers are limited.

LPHAs were asked about who conducts informatics-related training for their staff. The top three responses were the agency itself, vendors, and for-profit providers of IT training. Half of the respondents reported receiving informatics training from state health agencies, and four reported receiving

"We'd like to have informatics training, but everyone is very busy - both those who might prepare courses, but especially those who would be taking courses."

– survey respondent

"In general, 1%-5% is budgeted for ALL trainings, including IT related."

– survey respondent

"More education about IT and its importance is needed for leaders within the public health field. Only they can initiate and trigger institutional IT attitude change, placing more importance on public health informatics, and leading public health institutions into today's information age – allowing them to effectively and competitively run the businesses of public health."

– survey respondent

training from the Centers for Disease Control and Prevention (CDC). Few LPHAs reported using independent consultants, universities, or professional societies for informatics training.

Conclusions and Recommendations

Supply and Demand

Although survey participants indicated that the need for informatics training for the LPHA workforce is high, supply of—and demand for—training courses related to public health informatics are low.

The Demand Dilemma: NACCHO's small-scale survey suggests that informatics training may receive a low priority relative to other areas of training at LPHAs. The following are some possible reasons for this low priority:

- Senior management does not appreciate how effective information systems can improve the performance of the LPHA.
- Public health workers do not understand how using IT more effectively can help them to enhance their job performance.
- Public health workers are not given incentives for increasing their informatics skills.
- Senior management does not recognize the importance of training to the goal of effective information systems.

The Supply Shortage: Results suggest that sources of informatics training for public health workers are limited. A large majority of informatics training is conducted either by the LPHA or by for-profit providers of IT training. In most cases neither the LPHA nor for-profit providers are ideal sources of training on more sophisticated personal uses of IT (Class 2 informatics competencies) or use of IT to further the public health enterprise (Class 3 informatics competencies).

Reasons might include:

- Few LPHAs have sufficient resources to develop such training courses.
- Developing individual courses at hundreds of LPHAs is not efficient.
- Prices charged by private-sector providers are far higher than LPHAs are willing and able to pay.
- Classes offered by private-sector providers are unlikely to incorporate the perspective and requirements of the public health enterprise.

Providing training for LPHA staff is typically a responsibility of state health agencies. Only half of survey respondents reported that their states provide informatics training. All states should be encouraged to work collaboratively with LPHAs to develop and provide informatics training that meets their needs.

Examination of commonly used Web-based public health training resources (such as Public Health Foundation's TrainingFinder, HRSA's Public Health Training Centers, and CDC's Public Health Training Network) shows that very few public health informatics training classes are offered through these organizations or their members. It is difficult to assess the extent to which training for specific programs areas (e.g., maternal and child health or environmental health) includes informatics-related topics or skills.

Time and cost-effective methods of instruction required

As indicated in the survey, LPHAs lack sufficient time and money to dedicate to informatics training. NACCHO's survey also included a series of questions about LPHA requirements and preferences for in-person and online

training courses for senior management and program staff. Respondents preferred in-person to online training, and reported that online training would be more feasible for program staff than senior management. A large majority of respondents indicated that regional training (i.e., travel by car) would be appropriate for their LPHAs.

Most respondents said that training did not have to be on site—it could be regional—but air travel would typically not be in the training budget.

Research the informatics skills of the public health workforce

A review of informatics literature shows that little is known about the informatics skills of the public health workforce. Further research should identify those areas in which public health workers lack informatics skills, and it could indicate priorities for additional training. Additional research could illuminate barriers preventing LPHAs from providing the needed informatics training and suggest ways to overcome them.

Recommended Actions

Develop an overall national training strategy.

- Assess the informatics competencies of the overall public health workforce.
- Through federal, state, and local collaboration, plan how to meet the public health workforce's informatics training needs, including roles of each component.
- Integrate informatics competencies into broader workforce development plans.

Increase demand for—and supply of—public health informatics training.

- Explore possible reasons for low demand and address them.
- Encourage states to work with locals to provide appropriate training.
- Add informatics training to schools of public health degree and continuing education offerings (IOM, 2003).

Develop and implement informatics training methods that are highly time- and cost-effective.

- Develop train-the-trainer and mentorship approaches.
- Provide distance-learning venues.
- Create cooperative learning venues with schools of public health, state public health agencies, and private public health institutes.
- Include informatics as a component of program-specific training.
- Conduct demonstration projects to help determine which of the training methods are most effective for various types of informatics training.

Next Steps

Providing more information to public health leaders on the evolving area of public health informatics could help increase understanding of the need for—and the benefits of—training in information technology tools.

Movement in this area has begun:

- In summer 2003, the Association of State and Territorial Health Officials (ASTHO), in conjunction with the Public Health Informatics Institute, offered public health informatics training to the senior deputies.
- NACCHO, in conjunction with the Public Health Informatics Institute, offered a public health informatics workshop as a part of its learning institute following the 2003 annual conference.
- The National Association of Local Boards of Health (NALBOH) offered a session on public health informatics at its annual meeting.

Further opportunities exist in advanced training programs for MPH, DrPH, PhD, and certificate programs.

The National Public Health Leadership Institutes (PHLI), an innovative, 12-month leadership development program funded by the Centers for Disease Control and Prevention, could offer a component focused on the leadership role in informatics.

As advanced information technology tools become increasingly prevalent, LPHAs should determine whether staff at all levels are trained to incorporate the power of these tools. Without the capability and competence to use the tools in the ways they are designed, LPHAs risk not being able to access data and information when needed, while being overwhelmed by the sheer quantity of data and information generated.

Putting Training on Track

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About Public Health Informatics Institute

The Public Health Informatics Institute is dedicated to advancing public health practitioners' ability to strategically apply and manage information systems.

The Institute assists federal, state, and local public health agencies and other public health stakeholders that are grappling with information systems challenges.

Our services provide clarity about the information systems problems to be solved and identify the solutions to those problems.

The Public Health Informatics Institute is a component of The Task Force for Child Survival and Development.

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